

REMARKS

Claims 1-14 are pending in this application. Claims 5, 7, 8, 10 and 14 have been withdrawn from consideration. By this Amendment, the specification and claim 1 are amended. Support for the amendments can be found, for example, in the specification (see page 11, lines 20-23 and Figure 1a). No new matter is added.

In view of the foregoing amendments and the following remarks, reconsideration and allowance are respectfully requested.

I. Objection to the Claims

The Office Action objects to claim 1 due to informalities. By this Amendment, claim 1 is amended to obviate the objection. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

II. Rejection Under 35 U.S.C. §112

The Office Action rejects claims 1-4, 6, 9 and 11-13 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. Specifically, the Office Action asserts that various features of claims 1 are indefinite, and that claims 2-4, 6, 9 and 11-13 are indefinite based on their dependency from claim 1. By this Amendment, claim 1 is provided with proper antecedent basis to obviate the rejection. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

III. Rejection Under 35 U.S.C. §102

The Office Action rejects claims 1 and 6 under 35 U.S.C. §102(b) over WO 98/13882 to Van Andel et al. ("Van Andel"). Applicant respectfully traverses the rejection.

Claim 1 recites, *inter alia*, a process for manufacturing a solar cell foil comprising ... wherein in any one of the preceding steps an etch resist is provided on a second side of the temporary substrate opposite to a first side of the temporary substrate at least at the location of the interconnect, and at least not at the entire location of the front groove, followed by

selectively removing the temporary substrate where it is not covered with etch resist, to obtain a solar cell foil provided with a protective cap on the transparent conductive oxide ("TCO") at the location of the interconnect. (Emphasis added). Van Andel fails to disclose at least each and every feature of claim 1.

The Office Action asserts that Van Andel discloses various features of claim 1, including: providing an etch resist on the non-TCO side of the temporary substrate **1** at least at the location of the interconnect, and at least not at the entire location of the removed material **5**, and selectively removing the temporary substrate where it is not covered with etch resist (see Office Action, pages 4, 7 and 10). The Office Action asserts that Van Andel allegedly inherently discloses that the etch resist is not provided at the entire location of the front groove, "because the temporary substrate is made of metal and leaving a rest of such substrate covering the front groove would produce a short-circuit..." (see Office Action, pages 4, 7, 10 and 11). However, for at least the reasons presented below, the above is a mischaracterization of Van Andel and, accordingly, Van Andel fails to disclose each and every feature of claim 1.

Van Andel merely discloses a method for manufacturing a photovoltaic foil that includes providing a temporary substrate **1** that is later removed by dissolving or etching (see Van Andel, page 3, line 13, page 5, lines 15-16, page 19, lines 1-2 and Figs. 11 and 12). As illustrated in Figs. 1 and 2 of Van Andel, a temporary substrate **1** is first provided, upon which a transparent conductor **2** is deposited (see Van Andel, page 17, line 26 to page 18, line 1). Other layers are added, throughout which patterns of stripes **7** are created by removing narrow tracks of material via chemical etching to form tracks **5**, **9** of removed material (see Van Andel, page 18, lines 7-10 and 17-21; and Figs 3, 4, 6 and 7). The temporary substrate **1** is then removed by etching (see Van Andel, page 19, lines 1-2 and Figs. 11 and 12).

It is well settled that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *See* MPEP §2131. Based on the above, Van Andel fails to disclose a method comprising: (1) providing an etch resist on a second side of the temporary substrate opposite to a first side of the temporary substrate, at least at the location of the interconnect and not at the entire location of the front groove; and (2) selectively removing the temporary substrate where it is not covered with etch resist, to form a protective cap on the TCO at the location of the interconnect, as recited in claim 1. Contrary to the assertion made by the Office Action, Van Andel does not disclose providing an etch resist on the non-TCO side of the temporary substrate 1, but instead merely deposits a transparent conductor 2 on the temporary substrate 1, and later removes the temporary substrate 1 in its entirety by etching, without any selectivity in its removal, and without forming a protective cap on the TCO at the location of the interconnect, as recited in claim 1. As clearly illustrated by Figs. 11 and 12 of Van Andel, positively no portion of the temporary substrate 1, at any location, is retained for the purposes of creating a protective cap, as recited in claim 1 (see also specification, Figs 1a and 1b).

Based on the above, Van Andel fails to disclose each and every feature of claim 1 and, thus, does not anticipate claim 1. Claim 6 depends from claim 1 and, thus, is also not anticipated by Van Andel. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

IV. Rejections Under 35 U.S.C. §103

A. Van Andel

The Office Action rejects claims 1, 2, 6 and 11 under 35 U.S.C. §103(a) over Van Andel. Applicant respectfully traverses the rejection.

The above discussion with respect to Van Andel and the rejection under §102 is incorporated herein by reference.

For at least the reasons that follow, Van Andel fails to provide any reason or rationale for one of ordinary skill in the art to have modified its disclosure to have included: (1) providing an etch resist on a second side of the temporary substrate opposite to a first side of the temporary substrate, at least at the location of the interconnect and not at the entire location of the front groove; and (2) selectively removing the temporary substrate where it is not covered with etch resist, to form a protective cap on the TCO at the location of the interconnect, as recited in claim 1, without the benefit of Applicant's disclosure.

Van Andel discloses that it is preferable and advantageous to use a metal or metal alloy foil as a temporary substrate, for at least the reasons that such metal temporary substrates can be removed with relative ease, and therefore side electrodes can be formed by "allowing part of the temporary substrate to remain in place (e.g. as side edges or stripes)" (see Van Andel, page 5, lines 12-21). Further along in its disclosure, Van Andel again references this formation of side electrodes by removing only a portion of the temporary substrate 1 by applying an etch resist "preferably in narrow stripes at most covering two transparent conductor tracks" (Van Andel, page 16, line 27 to page 17, line 2).

As a result, one of ordinary skill in the art would not have been motivated to modify the disclosure of Van Andel to have included: (1) providing an etch resist on a second side of the temporary substrate opposite to a first side of the temporary substrate, at least at the location of the interconnect and not at the entire location of the front groove; and (2) selectively removing the temporary substrate where it is not covered with etch resist, to form a protective cap on the TCO at the location of the interconnect, as recited in claim 1, without the benefit of Applicant's specification, at least because Van Andel only merely discloses optionally manufacturing side electrodes by removing portions of the substrate so that a contact for connection to an auxiliary apparatus is formed (Van Andel, page 5, lines 18-19).

In the claimed process, by providing an etch resist on a second side of the temporary substrate opposite to a first side of the temporary substrate, at least at the location of the interconnect and not at the entire location of the front groove, when the temporary substrate is removed, it will not be removed at the location of the etch resist. With reference to Figures 1a and 1b of Applicant's specification, Figure 1a illustrates an etch resist cap 7 formed on the temporary substrate 1 at the location of the interconnect 6 (specification, page 10, line 28 to page 11, line 1). In Figure 1b, the temporary substrate is removed, except at the location where the etch resist cap was formed. As a result, any etchant that is used to remove the temporary substrate is prevented from coming in contact with the interconnect, thereby preventing undesirable damage, avoiding unwanted compromising of the series connection, and significantly improving the conductive properties of the protected interconnect to guarantee functional success (page 4, lines 9-17).

In view of the foregoing, Van Andel would not have rendered claim 1 obvious. The remaining claims variously depend from claim 1 and, thus, also would not have been rendered obvious by Van Andel. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

B. Van Andel and Morikawa

The Office Action rejects claims 3-4, 9, 12 and 13 under 35 U.S.C. §103(a) over Van Andel and further in view of U.S. Patent No. 5,637,510 to Morikawa et al. ("Morikawa"). Applicant respectfully traverses the rejection.

The above discussion with respect to Van Andel in relation to claim 1 is incorporated herein by reference.

Claims 3-4, 9, 12 and 13 depend from claim 1 and, thus, contain all of the features of claim 1. Therefore, the deficiencies of Van Andel with respect to claim 1, as discussed above, are applicable to claims 3-4, 9, 12 and 13. The Office Action merely applies

Morikawa as allegedly disclosing additional features recited in dependent claims 3-4, 9, 12 and 13. Regardless of its disclosure, Morikawa does not cure the deficiencies of Van Andel with respect to claim 1.

Thus, Van Andel and Morikawa, individually or in any combination, would not have rendered claim 1 obvious. Claims 3-4, 9, 12 and 13 variously depend from claim 1 and, thus, also would not have been rendered obvious by the applied references, individually or in any combination. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

C. Van Andel and Jordan

The Office Action rejects claims 1, 2, 6 and 11 under 35 U.S.C. §103(a) over Van Andel in view of U.S. Patent No. 4,243,432 to Jordan et al. ("Jordan"). Applicant respectfully traverses the rejection.

The above discussions with respect to Van Andel and the rejections under §§102 and 103 are incorporated herein by reference.

Jordan merely discloses a photovoltaic panel isolated into a plurality of individual cells where portions of a Cu_xS film **22** and CdS film **14** are removed from above a portion of the SnO_x film **12**, as illustrated in Figure 2 (Jordan, col. 5, lines 55-60). Jordan thus does not cure the deficiencies of Van Andel with respect to claim 1, and in combination with Van Andel, fails to provide any reason or rationale for one of ordinary skill in the art to have combined and modified either Van Andel or Jordan to have included: (1) providing an etch resist on a second side of the temporary substrate opposite to a first side of the temporary substrate, at least at the location of the interconnect and not at the entire location of the front groove; and (2) selectively removing the temporary substrate where it is not covered with etch resist, to form a protective cap on the TCO at the location of the interconnect, as recited in claim 1, without the benefit of Applicant's specification.

Thus, Van Andel and Jordan, individually or in any combination, would not have rendered claim 1 obvious. Claims 2, 6 and 11 variously depend from claim 1 and, thus, also would not have been rendered obvious by the applied references, individually or in any combination. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

D. Van Andel, Jordan and Morikawa

The Office Action rejects claims 3, 4, 9, 12 and 13 under 35 U.S.C. §103(a) over Van Andel in view of Jordan, and further in view of Morikawa. Applicant respectfully traverses the rejection.

The above discussion with respect to Van Andel and Jordan is incorporated herein by reference.

Claims 3-4, 9, 12 and 13 depend from claim 1 and, thus, contain all of the features of claim 1. Therefore, the deficiencies of Van Andel and Jordan with respect to claim 1, as discussed above, are applicable to claims 3-4, 9, 12 and 13. The Office Action merely applies Morikawa as allegedly disclosing additional features recited in dependent claims 3-4, 9, 12 and 13. Regardless of its disclosure, Morikawa does not cure the deficiencies of Van Andel and Jordan with respect to claim 1.

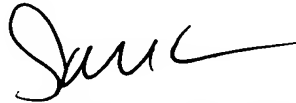
Thus, Van Andel, Jordan and Morikawa, individually or in any combination, would not have rendered claim 1 obvious. Claims 3-4, 9, 12 and 13 variously depend from claim 1 and, thus, also would not have been rendered obvious by the applied references, individually or in any combination. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

V. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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Attachment:
Petition for Extension of Time

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